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IN THE LAND OF DYKES AND WINDMILLS.

AFTER a short sojourn at the Antwerp Exhibition, an account of which was sent in a former letter, a start was at once made for Holland, that land of dykes and windmills, about which we hear so much and really know so little. A dusty ride of two hours in the stuffy compartment cars of the Belgian State Railway lands the traveller at the new railroad station at Rotterdam, on the right bank of the Maas, near its confluence with the Rotte, from which stream the city takes its name.

Rotterdam is a typical Dutch city, with canals crowded with a multitude of craft of the Holland type, easily recognized by the peculiarity that the blunt stem and stern are so near alike, that at first sight it is almost impossible for a stranger to decide which is fore or aft. The sails of this craft are of a dirty brown in place of the white that we are accustomed to see. Taken altogether, a craft of this kind as it floats lazily along is a good subject for the camera when just in the right light and position.

The pride of the city, however, is the Boompjes, a street or quay on the Maas river front. Steamers of nearly every nationality are moored here, the depth of water being about forty feet.

Draw-bridges cross the numerous canals which intersect the city, from which snapshots can be made, showing picturesque

combinations of water, bridges, trees and shipping in the heart of a built-up city. One of the most picturesque vistas of this kind, with ancient overhanging houses on the banks, showed a large windmill in the background. It was a moonlight night when we crossed over this bridge. I took in the beauties of the scene, and concluded to make several photographic studies of that spot on the first clear day. Two days elapsed before the weather proved propitious for a good negative. On arriving on the spot with camera and outfit, in our mind already seeing the scene reproduced in the *JOURNAL*, what was our disappointment to find that during the intervening days some artist had painted in large white letters a legend on the dark side of the picturesque old windmill. It read something like this: *USE BOOMPINJHIS BATAVIA COCOA*. The exposure was not made.

The market place also offers many opportunities of good snapshots for the hand camera. The produce carts drawn by dogs or women, sometimes by both at the same time, are excellent subjects when caught in a good light. The fish market, where all fish are sold alive, is also worthy of a visit with a camera.

A word of caution to such tourists as contemplate a visit to Rotterdam and other Dutch cities,—let them beware of the professional guides, who pester them and follow their footsteps at almost every turn, if assistance is needed to carry the outfit or to show the way—it is far better and cheaper to hire one of the many porters or *Dienstmannen*, who are to be found in all public places. It is absolutely requisite however to make your bargain beforehand, or inquire at the hotel as to their fixed prices.

Leaving the busy city of Rotterdam with its commerce and shipping, about half-an-hour's ride brings the tourist to the Hague, the direct counterpart to the first-named city; broad, clean streets take the place of crooked lanes, while the few canals that intersect the old city become even more beautiful, from the rows of fine trees that line the banks.

The best camera subject in the Hague is the *Vijver*, or fish-pond, a large square pool in the very centre of the town. In the middle of the pool is a small green island, which is the home of numerous swans.

The south side of the pool is formed by a dull red brick building, which here and there overhangs the water. This ancient structure, dating back to the thirteenth century, was formerly the castle of the Counts of Holland, and is now known as the "Binnenhof"; it forms a square with a large courtyard in the centre. The old HALL OF THE KNIGHTS, with its gables and turrets, the cloistered courts, the north and south wings, which contain the chambers of the *States-General*, with the ancient mantel-pieces, the fine wrought-iron fountain in the court-yard, the Gevangenpoort, or mediæval Prison, all offer excellent subjects for the camerist. Every turn and corner about the old Binnenhof shows artistic bits and nooks well worthy of the photographer's or artist's notice.

The market-place, town hall, historic landmarks and churches are all interesting, and well worthy of a visit from the camerist with artistic proclivities.

The names of The Hague and Scheveningen are almost synonymous, though the latter is three miles from The Hague. Scheveningen is the chief watering-place in Northern Europe, and is connected with the Hague by several lines of tramways.

Leaving the beach and Kurhaus with its fashionable visitors, the camerist can press the button to his heart's delight in the old Dutch fishing village that nestles among the sand dunes. The *Pinken*, as the Dutch fishing-boats are called, are nowhere blunter, while the fishermen surpass in picturesqueness even the Neapolitan Lazaroni. The low tile capped houses in the village recalls the time when William, Prince of Orange, ruled over the Netherlands, while the narrow crooked streets, with the chubby children, either barefoot or in wooden sabots, make one wish that cameras could be loaded with films equal to a thousand exposures.

And last of all the fisherwomen, with their peculiar, quaint dress, carrying baskets of live fish on their heads,—well, one is sure to meet with the latter just after the last plate has been exposed.

An hour takes one from the Hague to Haarlem, on the Spaarne, the capital of the Province of North Holland. Here, again, we

have picturesque gabled houses, quaint streets, busy canals, and ancient landmarks to remind us of days long gone by. The market-place offers scenes of life and activity, a mere glance at which brings joy to the artist and camerist.

The old *Vleeschal*, or meat market, said to be the quaintest brick and stone building in all Holland, the Groote Kirk, or great Church, of St. Bavo, with its high tower, and the Town Hall, once a palace of the Counts of Holland, now a museum, all face on the market-place, and form suitable backgrounds for the picturesque scenes that may be caught on the sensitive plate in the square. The ancient Amsterdam Gate, a curious brick structure, is also well worthy of an expenditure of several plates.

Haarlem is noted for its bulb and flower trade, the finest gardens throughout the world, all being supplied with roots and bulbs from Haarlem. During the flower season, when tulips and hyacinths are in bloom, the city is visited by scores of visitors to see the acres and acres of bulb gardens and flower farms that surround the city.

This sight, as beautiful as it is, unfortunately offers little or no inducement for the camerist, as the flat picture fails to convey an idea of the beauty of the scene.

An excursion, however, should be made to the Village of Bloemendaal, distant about three miles behind the sand dunes. Here are the country residences of the wealthy bulb-factors, and each individual owner vies to surpass all others in the floral decorations of his grounds. Nowhere in Europe is scientific and ornamental floriculture carried to the extent that is to be seen in Bloemendaal. Permission to photograph can be obtained on application at most of these villas.

Near this veritable paradise of floral decoration is the old chateau of Brederode, once the seat of a powerful family, but all that is now left is a picturesque red brick ruin of the once stately castle. A fit subject for the camerist's attention.

Turning our back on the town of tulips and bulbs, a short ride brings the tourist to the Northern Venice (Amsterdam), the commercial capital of Holland, with its half a million of inhabitants.

It is said that the Bostonian is the only stranger who can find his way in Amsterdam. When this city was built, an ordinary spider web was no doubt used for a street plan,—which, by the way, are as likely to be a canal as a paved street. The city virtually consists of 90 islands, which are joined together by over 300 bridges. All the houses and buildings rest upon piles; the giving way of the latter causes a settlement of the building, which, as it leans out into the street, contributes much to the picturesqueness of the town, but hardly adds to the safety.

There is much of interest to be seen in Amsterdam. The barges and the every-day life on the canals and quay all form food for the camera not to be found elsewhere.

One of the first matters to attract the attention of the writer was the large number of local photographic views that are hawked about the city. In most all the shops as well as in the streets one is continually opportuned to buy photographic views as a souvenir.

The one peculiarity of these views is that they are almost universally poor, not to say bad, the exception being the views made by the photo-lithographic process in Germany, which so closely imitate an albumen print, mounted and unmounted, that only an expert can tell the genuine from the spurious. The latter of course are offered at a lower price than the genuine local product, and are bought by visitors in preference to the mediocre product of the local Dutch artists.

An effort was made to see the genial editor of *Helios*, Dr. J. G. C. Schlencker, but it failed on account of the latter's absence from home. The local Photographic Club, which has fine rooms near the Damrak, was also closed for the summer during the writer's visit.

One of the great desires of the writer was to obtain a few good studies of a typical Dutch wind-mill. Ten days had already elapsed, and still the wind-mill wanted had not materialized. The time in the land of cheese and schnapps was getting short. As a last resort the stately portier of the hotel was taken into confidence, and asked where a few good windmills could be found. His answer was simply *Zaandam*. When pressed to be more ex-

plicit he stated that Zaandam was about six miles from Amsterdam, and there were to be found over four hundred wind-mills in active operation, of all ages, styles, conditions, colors and shapes, some grinding corn, cutting timber, pressing oil or pumping water, *i.e.*, draining the surrounding country. It is in this peculiar branch of Dutch life that the windmill is the chief factor.

Arrangements were at once made for a photographic trip to Zaandam on the next day should the day prove propitious. The large camera and fixings were gotten out to see that all was in order for the morrow, when it was found that the front board with flange had been left in Philadelphia. Here was a dilemma; seven o'clock in the evening, getting ready for a start early next morning, and no front board or flange.

Again refuge was taken with the majestic hotel Portier, and he was equal to the occasion; he at once referred to the leading photographic stock dealer, in the Papenburgsteeg, immediately adjoining the *Hotel de Haas*. Time was passing, it was after seven o'clock when the dealer was found, and then he had neither front board nor flange; he however was equal to the occasion when told of the predicament that the camerist was in. He took us to an artisan not many blocks from his store, and stated the case to him—the latter told us to leave camera and lens with him and to call between six and seven in the morning. Promptly at 6.30 the next morning we called at his place—flange and board were ready. No better piece of work could have been done anywhere; his charge was two florins, eighty cents.

A ride of about half an hour on one of the little Zaan steamboats brings the tourists to Zaandam, a thriving place at the influx of the Zaan into the Y. So far as the town itself is concerned it is a mere suburb of Amsterdam, and is made up almost of the villas of the Dutch millionaires who have their offices in the metropolis. The smaller houses, all of one or two stories, have the peculiarity of being painted bright green or red.

As the tourist steps from boat or train at Zaandam he is at once set upon by the so-called guides, who all persist in showing the stranger the so-called hut of Peter the Great, the considera-

tion being from one florin up—the distance,—well, about three minutes walk from the boat-landing.

On landing in Zaandam the objective point was to reach one of those 400 windmills. A persistent guide who had singled the camerist out as his legitimate victim, seized the camera and shouted, "This way for Peter the Great!" but we told the fellow that we did not care a snap for the old hut, to let go of our box, and go about his business. The more we tugged at the box the more he held on, it would cost only two florins to let him point out the hut. All to no purpose; at last, when all our patience was exhausted, we threatened to use the tripod over his head with force and vigor if he did not put down our box. Seeing that it would be unhealthy for him to hold out longer, the guide, in the blandest manner, asked us to give him at least a florin for the time he had lost by our refusal to hire him. But to return to our objective point, the four hundred stately windmills. After the guide was disposed of, a short walk out of the town brought the windmills into sight. There may have been 400 of them,—we will not dispute the number, but they were scattered over a large tract of country.

After some study, a fine specimen was singled out and a start made for it. After walking about two miles in the hot sun over a soft and swampy meadow we found a wide and deep ditch when within about two hundred yards of the mill, there was no way of crossing, and the path had to be retraced the full length before the ditch could be crossed. Then another start was made—another tramp of about two miles, then again another ditch, fortunately there was a drawbridge over the second ditch, about three-quarters of a mile from where we were, another half hour's tramp over the swampy meadow and we stood before a fine saw mill that ran by wind power. The mill was in operation, the four large sails swung around with great force,—this was an excellent situation for the miller, but precluded any idea of a photographic study, especially as the breeze was fresh and showed no sign of abatement until the sun went down.

The photographic situation was critical. There was but one of two things to be done,—one was to stop that old mill, or pack up and retrace our steps without the coveted negative.

At last we took courage and went up to the owner of the mill, who was also its chief engineer, we introduced ourself to him in our choicest Pennsylvania German, tried to tell him that we wanted to photograph his mill, however, he failed to comprehend. In despair, we showed him our traveling card of the *Turkeytown Hypo Club*, and the medal we had won at the last joint exhibition, which we carried around our neck suspended by a blue ribbon, all, however, to no purpose. We offered to photograph his wife, girl, dog, or anything, even down to the wooden clogs he wore, if only he would stop those flails for about three minutes, so that a negative could be made, all, however, was to no purpose.

At this stage of affairs matters seemed to look blue; fortunately help was near at hand, we had almost given up the case, and sat down in a lumber shed and prepared to pack up the camera once more. A boy, about eighteen or nineteen, who worked in the mill and could speak some German, came up and said that for a florin he could stop the mill, the coin was dropped and results awaited. The boy disappeared, so did the florin, and still the mill kept on sawing through knot and log; all at once, just when we had concluded we were a florin out, there was a rattle of machinery, a shout from the miller, and in a moment or two the mill was thrown out of the wind. The boy had kept his word, just how he had earned his florin we did not care to investigate.

The lens was quickly trained on the coveted subject, several exposures made, and after packing up, steps were retraced to the steamboat landing and thence to Amsterdam.

The same night a few of the plates were developed at the hotel, thanks to the Carbutt Tabloid. One of the results is presented to the readers of the JOURNAL.

In the vicinity of Amsterdam, on the Zuider Zee, there are several dead cities, such as Hoorn and Enkhuizen, that should be visited by the photographic tourist if he has the time at his disposal.

Holland may well be called a Paradise for the hand camerist as well as the artist photographer.

J. FOCUS SNAPSCHOTTE.

THREE METHODS FOR THE DETECTION OF
FORGERY.*

BY DR. PERSIFOR FRAZER.

I wish to put on record three new methods which I have applied successfully for the purpose of detecting frauds in written documents.

The first enables one to determine with comparative ease which of two crossing ink lines was made first, and consists in observing the crossing by a lens of low power (four or five diameters) at a very oblique angle. If a light ink line be made over a darker one the appearance to the eye when viewing the crossing perpendicularly to the plane of the paper will be that the darker line is superposed. The reason of this is that ink lines are quite transparent and the darker line is seen through the lighter one and seems to make one continuous line with its two limbs across the intersection. When the paper is inclined, however, but few of the rays of light which reach the eye by reflection from the intersection traverse and lose rays by absorption from both ink films; but the greater number penetrate only the upper ink and do not suffer absorption by the lower.

The second is a method of judging whether or not two lines have been made with the same ink and consists in passing over each in succession prisms of red, yellow or blue glass (or two of these), and noting the number of millimeters through which it is necessary to move each prism from the position where its thin edge is in contact with the mark to be judged to that where the color is extinguished and the line is black. The prism is pushed horizontally over the ink mark continually adding to the thickness of the colored glass over the latter. When the line appears quite black the thickness in mm. over which the prism has been pushed is read off and compared with the number of mm. which the other line requires to attain the same result. If the inks have the same colors these results must agree.

Third method. In 1886, I read before the Society a paper on the use of composite photography for the purpose of establishing

*Read before the American Philosophical Society, May 18, 1894.

the type of an individual's writing and especially the signature. Since then the mechanical difficulties in the way have been greatly lessened, and the method has given most valuable results in cases before various courts. But there are many occasions where it cannot be employed for one reason or another, and in such cases I have devised a system of measurement and tabulation which accomplishes by figures what composite photography established automatically by form. The older method may be called the graphic average of the handwriting and the latter the numerical average. The advantage of the former is that it takes into account at once *all* the elements of character, while the latter can deal only with comparatively few, but in spite of this the results attained have been very interesting.

By the system here alluded to a given number of heights breadths and angles of letters, and spaces between them and between words, are selected and measured in a large number of undisputed signatures. The same elements are then measured in the signature in dispute. The averages of all the elements in the genuine series is then compared with the latter, and their agreement or disagreement will generally lead to a correct judgment as to the genuineness of the disputed signature.

This method has given successful results in a direction which extends the original idea to a study of "guided hands," and it has been possible to extract from the columns of measurements, proofs of the existence of characteristics of each of the separate handwritings.

A Fine Souvenir.—The Gutekunst Co. have just issued a very pretty and appropriate memorial of George W. Childs, in the shape of a large phototype, on which are artistically grouped around a large and the best portrait of Mr. Childs a picture of his home at "Wootton," the *Public Ledger* building, a view of the new publication office of the *Ledger*, his private office, a fac-simile of an autograph letter, and a view of Mr. Childs' last resting place in Woodland Cemetery. These are all shown with a fac-simile of the *Ledger* of February 3, 1894, containing an account of the death of the late editor and publisher of the *Ledger*, as a background.

NEW RESEARCHES ON THE INFRA-RED REGION
OF THE SOLAR SPECTRUM.

BY PROF. LANGLEY.

IN September, 1882, I submitted to the Academy a communication entitled "Observations on the Solar Spectrum," accompanied by a figure of the curve of energy of the infra-red spectrum obtained by means of a glass prism. On referring to this curve we see that below the wave-length 1.2μ we have obtained only twelve inflections, great and small, including the great band, the wave-length of which is about 1.8μ , the band which I have since designated as Ω , the existence of which has been established with precision by the observations made at Mount Whitney. It will be remembered that the existence of heat has also been established at a distance of nearly 3μ , the limit at which the prism ceased to transmit the radiation.

Photography has not succeeded in representing a much larger part of the infra-red than the eye has been able to perceive, considering that the rays whose wave-length exceeds 0.8μ can be distinguished with the naked eye, and I do not know that photographs have been published giving radiations the length of which is much above 1μ .

Certain interesting results have been obtained even below this point (1μ) by procedures of phosphorescence. But, if I am not mistaken, the curve given in my communication to the Academy comprised our principal actual knowledge concerning the extreme region, around and beyond Ω in the spectrum of a glass prism. These inflections were obtained and determined by means of the bolometer, and by a procedure so slow as to leave us no prospect of carrying our measurements much further.

In 1890 the Congress at Washington authorised certain astrophysical researches, the execution of which was intrusted to the Smithsonian Institute. Thanks to the experiments conducted in the last years, we have at last succeeded in substituting for the slow and personal method just referred to, another, which—though founded on the use of the bolometer—is almost automatic,

and which, whilst much superior to the old method in precision, is at the same time incomparably more rapid and delicate.

The bolometer and its appendages have been improved in such a manner that they are not confined to indicating a change of temperature; they also give its value where its variations are below one millionth of a degree C., since they are shown in the metallic ribbon of the bolometer, which has one twentieth mm. in diameter, and one five-hundreth mm. in thickness.

Clockwork of great precision moves the spectrum in such a manner that each of the rays, visible or invisible, passes successively over the ribbon, which meantime, on account of its slight mass, changes its thermic equilibrium in so short a time that it may be regarded as insensible. Since what is dark to the eye is cold to the bolometer, the presence of an invisible absorption ray is indicated by an almost instantaneous deflection of the galvanometer.

This deflection was formerly shown to the eye upon a scale. At present there is substituted for the scale a sensitive photographic plate, moved in a vertical direction by the same perfect wheelwork which passes the spectrum over the bolometer. It follows that the curve of energy is registered in a perfectly automatic manner by means of photography, with the aid of the bolometer, in regions hitherto quite inaccessible to photography alone.

A perfect synchronism being thus secured in the movement of the photographic plate and of the distant circle which carries the prism, we see without difficulty that the curve traced automatically can show us at first sight not merely the magnitude of the variations of the temperature of the spectrum, but also the exact part of the spectrum where they are produced.

Not many dozens, but thousands, of deflections, corresponding to the Fraunhofer rays of the visible spectrum, may thus be registered; and we can now obtain with precision, in an hour, results which could not be obtained with the micrometer, even at the cost of many years of arduous work, so well that we may take for comparison in one and the same day several representations of the entire spectrum. These, as well as others obtained on dif-

ferent days, are submitted to a strict comparison by a method which checks the existence of each inflection, at the same point of all the curves thus traced independently of each other, with a probable error of position which corresponds to less than a second of an arc. On thus examining the lower invisible spectrum, we discover that it is the seat of absorption, at least as complex as those produced in the visible spectrum, and the new method already distinguishes more than 2000 invisible rays. The maps of this region, hitherto unknown, will soon be published.

To prove to what extent the new method possesses the power of separation, we may apply it not only to the invisible spectrum, where for the present our word must be taken for the results obtained, but to the visible spectrum, where it may be applied to the study of a known region, *e.g.*, that of the ray D. Our apparatus, purely thermometric, not merely resolves this ray into its two elements, but reveals the ray of nickel found in the middle. This is the well-known test of visual spectroscopes of considerable power.

The graphic trace, on the contrary, is automatic, and of a double effect. We have, firstly, the curve of energy obtained automatically; the abrupt inflections are due to the extreme sensitiveness of the apparatus. It registers photographically the variation of temperature produced by each of the rays, which separately are invisible unless magnified.

A method, the details of which will be given in a future communication, renders it possible to convert this curve of energy into a linear spectrum. This linear spectrum, which the author gives in his memoir, is obtained by an automatic procedure applicable to all parts of the spectrum. Although the known angular distance between the rays D, in the spectrum given by rock-salt, scarcely exceeds ten seconds of the arc, the ray of nickel appears so separate from its neighbors that the possibility of a much further resolution appears evident. The instrument can separate rays whose interval does not exceed two seconds. Now, since this purely thermometric process is applicable in the total extent of the invisible heat spectrum given by a prism of rock-salt on a surface of 2° (say $7200''$), we may say that this

procedure has a power of resolution capable of revealing to us thousands of rays if they exist.

Taking the instance of these D rays, my object has been to inspire confidence in the assertion that the inferior infra-red spectrum, from $1.2\ \mu$ to $6\ \mu$, may now be reproduced automatically by a process giving hundreds of rays for each ray known hitherto, and that the relative position of each will be given with a precision hitherto unknown for measurements of this kind.

Let us add that not merely the greater part of the solar energy is found in this little-known region, but the absorptions seem to be due to our atmosphere rather than to that of the sun. Hence it is not improbable that their study may supply a precious means for foreseeing the variations which influence meteorological perturbations.—*Chemical News*.

They lost the Photographs but Saved the Whisky.—Dr. Frederick A. Cook, promoter and leader of a recent Arctic scientific expedition, has returned with his company of explorers to New York, having achieved such notable "success" as should not be passed unnoticed in an age so devoted to science as ours. It will be remembered that the iron ship "Miranda," in the early part of last July, carried away the gallant Cook and his party to the region of everlasting ice. Last week they returned, some by the steamer Portia, some from Halifax by rail, having met with one continuous succession of mishaps from first to last, including the loss of the Miranda, and the running down of a schooner, in which four lives were lost. Upon abandoning the Miranda, the thousands of photographs and collections made by the scientists were left behind, as was also the supply of provisions; and at Henley Harbor the passengers were obliged to take up a collection to replenish the larder. To this they made vigorous protest, and assert that the supply of provisions, as well as the photographic outfits and results and scientific collections, could have been taken off the Miranda when she was abandoned *instead of the supply of whisky*.

In youth a man is deluded by other ideas than those which delude him in middle life, and again in his decay he embraces other ideas.—*Mahabharata*.

WHAT TO DO AND WHAT NOT TO DO TO GET A SPEAKING LIKENESS.

HERE are some points for the woman who proposes to have her own or her husband's or her children's picture taken. They are the utterances of one who speaks with authority, a photographer. And this is what he says:

Be adaptable. Resign yourself with as complete confidence in the artist photographer as you would to an artist painter, and the result will be entirely satisfactory. Disabuse your mind of the idea that poses and expressions which look well as practiced before the mirror will photograph well. Before the camera they will generally produce distorted features, distorted bodies, and monstrosities of hands. Do nothing, forget that you want to look well, and you will succeed in looking natural.

As to your dress, any material that falls is desirable. Light colors are always preferable. For soft and dainty effects nothing is so beautiful as transparent materials, such as tulles, laces, nets. Black silk can be worn to advantage, and black tulle and lace take beautifully. Woolen goods define the figure best, being less liable to wrinkle and crease than silk or satin. Open work embroideries in collars and cuffs produce exceedingly fine effects, particularly in pictures of the Rembrandt style. Dark green and red are the desire of the artist; large plaids suggest comic pictures. Velvet, plush, and jet do not photograph well. Close bands about the throat are to be avoided; allow it to be free. The slender woman may have perfect confidence in the Rembrandt shading to produce roundness of outline. Rembrandt, as you know, painted the broad side of the face in shadow, and the narrow side in high light, with the result of a startling life-likeness in his portraits never excelled. The woman who is thin should drape the neck and arms in delicate gauze or lace, and half-concealing, half-revealing, making herself doubly attractive.

Never dress a child in velvet unless of light-colored hues. Your boy's charming black or green velvet suit will be a photographic failure. There is nothing so befitting a boy in a picture

as simplicity. Never ask the artist to make a full-length picture of a boy in knickerbockers. Boy's feet are proverbially large, and loom up immensely when attached to a pair of slim legs, clad from ankle to knee in stockings. Girls need accessories and striking effects—and, besides, are more graceful than boys. Baby, of course, must wear white, with no lack of ruffles and laces to add to his charm. Men's clothing should invariably be dark.

Don't tell the photographer that you are the worst subject in the world to photograph, and never had a successful picture. It is a stilted remark resulting from a species of egotism which simply means that no camera has ever yet succeeded in producing the beauties that you see in yourself.

Don't practice expression, and so succeed in disguising yourself.

Don't tell baby that birds and monkeys will jump out of the side of the gallery to amuse him. His disappointment will make him cross.

Don't bring the entire family along to keep the child in good humor. The artist can do that much more easily, and the baby is less likely to become nervous.

Don't bring a friend along to pose you. Trust to the professional rather than amateur skill.

Don't, if you are an amateur, try to instruct an artist of thirty years' experience how to make a successful photograph.

Don't grow angry if you cannot break the business rules of the studio because you do not think they are good.

Photographing Royalty.—An Italian photographer has taken a portrait of Queen Victoria, which has recalled a story of Mr. Downey when he first secured the Queen as a sitter. "What did you say?" and "What did she say?" asked friends. "Well," said Mr. Downey, "I took her Majesty just as I wad anny ither pairson; and when I'd settled her, I said, 'Wad it please her Majesty tae put on a more favorable countenance?' and she said, 'Sairtanly, Mr. Downey.'"

POPULAR TALKS ON LAW.

BY WM. C. SPRAGUE.

WE frequently hear the term "good-will" used as describing a benefit or advantage existing as a part of or in connection with a business. It is our purpose to discuss briefly the nature of this intangible asset as viewed in law.

It is defined in several cases as the advantage or benefit which is acquired by an establishment beyond the mere value of the capital, stock, funds or property employed therein, in consequence of the general public patronage and encouragement which it receives from constant or habitual customers on account of its local position or common celebrity or reputation for skill or affluence or punctuality or from other accidental circumstances or necessities, or even from ancient partialities or prejudices. This is a definition given by Story and followed in several cases.

Boiled down, this definition would seem to mean simply that the good-will of a business consists in the probability that customers will continue to come to the old place of business. At best, it is the sale of a mere chance, which vests in the purchaser nothing but the possibility that a preference which has usually been extended may continue.

Every sort of business does not of necessity possess a good-will that courts will protect. It has been asserted that good-will has no application to the professions of law, medicine and other learned professions, inasmuch as the business of a professional man has no local existence, and is entirely personal, depending upon the trust and confidence which persons may repose in his integrity and ability to conduct their legal affairs. However, of late sales of professional business have been held to include good-will, so that it may be said that the law now recognizes such business as possessing a good-will. Good-will itself, apart from the business, cannot be sold, it being a mere incident of other property, and only capable of being sold in connection with it.

As to its value, this depends entirely upon the circumstances of the case. It may be more or less valuable, according to loca-

tion, personnel of its ownership, or special advantages in the proprietor's mode of conducting it. Not only may the good-will be sold as any other asset, but also it may be mortgaged or sold under proceedings of court in connection with the property of which it is an incident.

The name of a firm is a very important part of the good-will of a business carried on by the firm. Persons become accustomed to buying at certain houses, or houses in a certain locality or known by a certain name, and being so accustomed, will resort to such places, notwithstanding a change of ownership. The name itself becomes an intangible asset of more or less value, according to circumstances. So in the case of trade-marks, which are an important part of the good-will of a business. In parting with the good-will of a business the seller means to part with all that good disposition which customers entertain toward the business identified by the name, trade-mark, location, etc. It is because of this value of the name that very many firms exist which do not contain a single member of the individual name expressed in the firm.

When one sells a business, he does not thereby agree not to engage in a similar business. Contrary to the general view, one in selling his business may agree not to engage in it again, provided there be a reasonable limit to the time and place within which he is not to engage in the business. If there be no stipulation to the contrary, the vendor may lawfully establish a similar business next door to the one he has sold and invite everybody to come and purchase, although he must not hold out himself as the successor to the business of the old firm. It is generally understood that the old customers may be solicited, although several of the older cases hold that they cannot be personally solicited. The tendency of the law, however, is to hold that in the absence of positive agreement the vendor may solicit trade from old and new customers alike either by indirect or direct means.

The sale of a good-will does not transfer to the purchaser any right to use the name where the name is the name of the vendor, unless there is an agreement to that effect. The buyer, can, however, advertise himself as the successor to his vendor.

Where the good-will merely pertains to the place of business, a sale of it does not give the right to use the firm name without an agreement to that effect. Sometimes the good-will attaches more to the place than to the business itself, as in the case of the good-will of an inn. The reverse is, however, true in the case of the good-will of a newspaper, where the name makes up the principal part of the value of the good-will. Where the good-will is not mentioned in the agreement of sale of a business, it will be presumed to be included, unless the circumstances are such as to show that only the tangible assets of the business were included.

Formerly, where one member of a partnership died, the good-will of the business went to the survivor, but it is now considered as a part of the general assets of a partnership for which the surviving partner must account. He may retain it upon payment of its full value, so held in a Nebraska case. Where several members of a partnership have sold out to one member, they may be restrained from carrying on a rival establishment under a name so similar to that of the first as to mislead and draw off business.

Returning to the matter of value, it may be said that the value of the good-will is to be calculated by estimating every advantage to be secured by succeeding to the business without reference to the exclusion of any person from engaging in the same business. In one case the value was assessed at one year's average net profits.

Legal Aspects of Photography.—M. Monel Fraipent, in an interesting paper on the "Legal Aspects of Photography" read before a meeting of the Belgian Photographic Society, decides that a person has an absolute right to his features, and alone can authorize their reproduction. In Belgium, by virtue of a law made in 1886, the possessor of a portrait cannot reproduce it or exhibit it publicly without the consent of the person represented, or his legal representatives for a period of twenty years from his decease. Arguing from this, any photograph made without the consent of the person photographed is illegal. The question whether photography can be rightly termed an art was decided from the points made strong in the affirmative.

THE DIFFERENCE IN PROCESSES OF FILM-
MAKING.

BY T. H. BLAIR.

SIR,—In a recent paper read before members of the Tunbridge Wells Amateur Photographic Association, and published in the photographic press, the author reasons as follows:—

"These various makes* may be divided into 'rollable' and 'cut sheet,' and without going into details as to the various substances used in their manufacture, he might mention that in the case of the former a very thin film of the composition in a fluid state is spread on glass, and as soon as dry is coated with the emulsion. With the cut sheet a solid block of material is produced, and slices of the requisite thickness are cut from it by mechanical means. As there is some little uncertainty as to the action of the various constituents of the celluloid support on the sensitive emulsion, and more particularly that of the camphor used, some advantage is gained for the cut film. By this method a certain amount of time is allowed to elapse, probably some months, before coating, for all volatile properties to evaporate, whereas the rollable film, on account of its delicate nature, has to be coated before removal from the glass."

The argument used by the author, as far as he goes, is quite correct, and must in practice prove so; but, as it would be inferred by the language used that all rollable film is made by this process, I feel, in justice to the companies bearing my name and the public as well, "the difference" should be pointed out, as the knowledge of the principle of this process, in which the defects are so apparent, has helped to spread the belief that rollable film cannot be made of as good quality or with as good keeping qualities as cut sheet film. The fact that patent protection for the process by which Blair's film is made has only recently been fully granted in European countries has, until the present, prevented this process being described and the great difference shown.

* Referring to film.

Without going into the disadvantages which are not apparent in the process described, I will endeavor to explain the principle of the process employed in making "Blair's Film."

It will be easily seen, even to those unacquainted practically with the principle of drying or seasoning any material, that the extraction of moisture or liquid (which is drying—and seasoning is only drying prolonged) is accomplished by air absorbing this moisture.

The condition of the air—*i.e.*, its ability to absorb moisture by being dry—as it is brought in contact with the material, and the frequency with which a fresh supply is brought into this contact, governing the drying or seasoning. In the manufacture of film, one of the important qualities is that it should be flat, or at least as nearly so as possible; it is, therefore, most essential that the base or support which takes the place of glass be exposed on both sides during the entire process of drying. If allowed to dry more on one side than another, curling will result, while if wound or packed before being fully seasoned, the edges exposed will dry, and of course contract, leaving a "bagginess" to the central part which, when once formed, is quite impossible to remove. The sheets from which a large amount of the "cut sheet film" are made have the advantages set forth, as the sheets are sliced from the block of celluloid while quite "green," and the drying carried forward by both surfaces being exposed to contact with the air.

The process used in making "Blair's Film" can be briefly outlined as follows:—The base, or the basic film taking the place of glass, is formed by spreading the liquid material on an endless moving surface—for instance, a cylinder—and allowing this material, which is formed into the basic film, to remain on this surface only sufficient time to become solid enough to be handled by the machinery without injury, then stripped and kept in motion over rollers, thus allowing the air to be passed over both surfaces equally until sufficiently seasoned, then carried to the coating machine in the non-actinic department, where the sensitive emulsion is applied, and the completed film is arranged on devices which still expose both sides of the film until the drying of the sensitive emulsion is completed.

Thus it will be seen that, from the time the basic film leaves the moving surface until the completed sensitive film is finally cut into proper widths and lengths, and wound or put in cut sheet packages, the air has constant access to both sides, and the time of seasoning the basic film before coating can be prolonged to any extent desirable by extending the area over which it travels, while as this process is carried on in compartments used for no other purpose, the temperature within them can be kept at any desired degree of heat, and the air changed by propellers as often as necessary.

It is surprising the great difference actual tests have shown in the time required to season by this method, compared with that of drying where no direct current can be brought in contact with the surfaces, even in a well-ventilated room. When the film is hermetically in contact with a non-conductor of heat and air, the difference in time is added to many fold. It will be seen that by this process basic film could be made of any length (even miles), and that the relations of the two processes are similar to that of forming fabrics in frames and that of weaving by modern looms. The "ground glass" surface of Blair's film is not produced by sand blasting the basic film itself, as is generally supposed (which would be not only an expensive but dusty and dangerous process), but by giving the travelling surface on which the film is formed a fine grain surface, which is reproduced on the film, and once prepared goes on giving the impression to miles of film without additional cost, labor, or dirt. As to the keeping qualities of film properly made, and with all damaging properties removed from the base, compared with glass plates, everything seems in favor of film, as the chief destroyer of the sensitive coating of emulsion is air—moist air, impure air.

With plates the non-flexibility of the support makes it unsafe to pack the surfaces together, and even when so packed the air is not kept from the surface, while even with cut sheet films it is almost entirely so, the flexibility of the support causing the sheets to be in quite perfect contact. With film in rolls the surfaces are practically hermetically sealed from the air, and a roll of film as wound by the manufacturers, with box and wrap-

ping removed, could be exposed to daylight without its affecting the sensitive surface at the ends of the roll, while but a few wraps of the roll would be found affected by the exposure. The advantages in weight, non-halation, and freedom from breakage, need not, I feel, be argued. Many faulty batches of film have been made, but have they (even comparatively and by the imperfect method) been as numerous as dry plates, or any other of the new processes which have revolutionised the method of making photographs, in their early stages? Film photography will be found interesting to watch in its onward march.

*The European Blair Company, Southampton-street,
Holborn, W. C., May 2, 1894.*

UNSUSPECTED.

PROBABLY nothing is more provoking to the operator than an unexplained trouble, and we venture to instance one or two causes which may arise in everyday working, and give imperfections in negatives or prints. Spots of one sort or another on a negative are producible by many things, often quite unsuspected. Some time ago we had a complaint from a photographer that all, or almost all, his negatives were more or less marked with small black specks of a comet-like shape. They were, on inspection, found to be well imbedded in the film, and yet no reflected light showed clearly on the surface, so that it was easy to conclude that the cause lay outside the film itself. Further examination showed that they all had a similar direction in all plates under inspection. On tracing these spots they were found to follow the direction taken by the inflow of the washing water in the frame in which the negatives were washed after fixation. This indicated where the trouble arose, and the rose through which the water flowed was found to be rusted, and when taken in the hand the loose rust yielded to the slightest touch, and the cause of spots was at once laid bare. A new rose disposed of the difficulty at once, and made the hearts of the operator and the maligned plate-maker to rejoice.

Another cause of spots on negatives is found in impure hypo. Cheapness in this article is a poor economy, for the article obtained under such conditions is usually found to be heavily charged with dirt and metallic impurities, which are most prone to adhere to and spot the negative.

The use of a fixing bath for a long succession of negatives is often a source of mischief, and unaccountable stains and markings, especially if, as is often the case, negatives which have been developed by various differing formulæ, and imperfectly washed, are all fixed in the same hypo solution.

We remember an instance, not many weeks ago, where a photographer complained loudly and bitterly of iridescent, marble-like markings over the whole of his plates. The cause seemed wrapped in perfect obscurity, for he averred most roundly that he followed instructions most carefully. A personal visit to his studio was made, and the root of the mischief was at once apparent. He had not any water supply in his dark room! nor any sink! A large earthenware pan, which at some remote period had been filled with clean water, stood in a corner of the room. Now it was a perfect ink in appearance. It served at once as a receptacle for his spent developer and for washing (?) his plates, between development and fixation. In it he poured his old fixing baths, and finally washed (?) his fixed negatives. Was it any wonder that his negatives were dirty and stained? This is a sober fact, and careless as we know many photographers to be, we never heard of or met with such a state of things. We will give the photographer credit for a ready acquiescence with our opinion that he was working in a slovenly way, and his ready acceptance of our suggestions as to amendment.

Some operators use loose dry pyro for development, and little know how much care is necessary to avoid a crop of trouble for themselves at some future day. Such a plan of working in a small, poorly-ventilated dark room will one day produce an army of spots on negatives which will cause an almost endless wonder and anxiety. The grains of pyro which are inevitably spilled lie dormant in the room until they accumulate and become numerous, when some day a fallen box rouses them, and they float over all,

and settle on plate, print and picture in an utterly unexpected way, yielding a harvest of spots on all, which give no trace of their origin without a careful thought and investigation.—*Photographic Scraps.*

THE HALF-TONE PROCESS.

WILLIAM SHAW.

BY this process relief blocks can be produced from pictures of any kind, wash drawings, or in fact anything from which a negative can be made. To produce these pictures a special negative must be made from a sheet of paper ruled over with lines all running one way. After exposure and before development, the sensitive plate is turned round and another exposure made on the same plate, the resulting negative giving white crossed lines and black spaces. From this a positive is made, becoming now black lines and white spaces. This forms what is called the "grained" or "cross-line screen," and is placed in the dark slide between the sensitive plate and the picture being copied. The result is that the negative is broken up into a series of dots, larger in high-lights and smaller in the shadows. Negatives for this process must be reversed; the best way to do it direct is to mount a mirror behind the lens at an angle of 45° . The mirror receives the image from the lens and reflects it on to the sensitive plate. Mirrors for this purpose are expensive, the price of one for a 12x10 camera being about £4. In the absence of a mirror, the best way to obtain a reversed negative is to strip the film from the negative, and this operation with collodion negatives is very simple. Place the plate on a levelling stand, and paste round it some thick strips of paper, pour a solution of gelatine over the plate and allow to dry; then cut round it with a knife about an eighth of an inch from the edge, the film will then strip off quite easily. In this condition it may be used as a film negative, better even than if it were glass, as it will stand greater pressure in the printing frame, thus ensuring more perfect contact. Cross-line screens can be purchased ready-made. Those of American manufacture seem to be the most popular.

To prepare the zinc for printing upon, it is first well rubbed with emery cloth until all the scratches disappear; none must remain. It must then be well finished off with stick charcoal and water until the surface is quite smooth. The finer the surface, the better the result. Before pouring on the sensitive solution, the polished face should be rubbed with French chalk, taking great care not to leave any dust on the plate—one spot of dust is quite sufficient to spoil everything. The sensitive solution is composed of bitumen, from which the particles insensitive to light have been removed by repeated washing in the following:

Bitumen	15 grains.
Methylated chloroform,	1 ounce.

This solution is filtered on to the plate held in the hand or by a pneumatic holder. A sufficient quantity is poured on to cover the whole plate at once, the surplus being poured back into the bottle. The coating dries almost immediately; if, on examination, it is found evenly coated all over, it is ready for putting into the printing frame. If there are any dust specks on the plate it must be cleaned and coated afresh. Dust specks are easily distinguished, as they leave marks behind them like comets' tails. When the zinc plate is put into the printing frame (which must be done in the dark room), it should be well screwed down so as to secure perfect contact between the negative and the zinc. The exposure should be made to direct sunlight if possible, and requires about ten minutes exposure. It is not a printing-out process, so the proper exposure can only be attained by experience. A certain amount of latitude is allowed as long as the exposure has been long enough. Under-exposure renders the plate useless; but an over-exposed plate can be sometimes saved by longer development. When the exposure is judged to be sufficient the plate is taken out of the frame in artificial light, placed in a clean porcelain tray, and covered with turps. and gently rocked.

If the exposure has been sufficient the image will gradually appear, the parts protected from the action of light by the dense portions of the negative slowly dissolving away. When the last detail is visible the plate is well washed under the rose and the

water blotted off—not rubbed. Another tray should be ready with a very weak solution of nitric acid, into which the plate must be placed, and rocked gently for a minute. This bath will just “dull” those parts of the zinc from which the bitumen has been removed. After immersion in this bath it is washed and dried, then examined to see if all the image is “out.” If this is not so the plate must be again removed to the turps., and left until the picture is clear. If it turns out perfect, the border lines are marked out with a fine brush and Brunswick black, the defective parts can also be touched up. As soon as dry it is ready for the first etching bath of weak nitric acid.

The first etching will take about ten minutes, the solution being kept in motion all the time, and the plate closely watched to see that no underbiting takes place. When the etching has continued long enough the plate is taken out and well washed and dried. It is then smeared over with a clear solution of gum arabic and placed in a cold current of air to dry—no heat may be used, or the surface will crack and bring off the film with it. After the plate has stood some time it is again washed off with a soft sponge, well rolled over with a lithographic roller charged with good printing ink, the plate being kept damp by means of a sponge during the rolling. When every part of the picture is covered with ink, finely powdered bitumen is dusted over, and the zinc placed on a hot plate till the bitumen is just melted. When cold immerse in the etching bath as before. It is now taken out and well washed. Turpentine is sprinkled over it, and with a piece of rag or a stiff brush the printing ink and bitumen is cleaned off. The plate is now ready for a proof to be taken in the printing press. The proof will appear flat and grey.

In order to increase the contrast recourse must be had to re-biting. To do this the plate is well cleaned with turpentine and whiting. A litho roller is charged with fresh ink to which has been added a quantity of wax; this is rolled lightly over the plate so that the tops of the lines only take the ink. If any ink runs down into the spaces between the lines, the plate must be well cleaned and the operation of rolling repeated. When satisfactory the plate is placed in a good light, and those parts that

already print dark enough are painted with a fine brush charged with Brunswick black, leaving only those parts which are intended to be lighter.

As soon as the stopped-out parts are dry the plate is again etched for five minutes, after which it is cleaned. Another proof is taken to see what improvement has been made, and to ascertain if further re-biting is necessary. Sometimes as many as six or seven re-bittings are required before the plate can be considered finished. It is a very important part of the process, and while the plate is in the bath it must be closely watched and withdrawn at the slightest sight of under-biting. To finish the plate it should be trimmed round the edges with a circular saw, the edges bevelled, and then nailed on to a piece of wood bringing the plate to the same height as type, viz., the exact height of a shilling stood on edge.—*The Practical Photographer.*

RECENT EXPERIMENTS IN ELECTRICITY.

SOME remarkable experiments in electricity have been exhibited in Boston by Prof. Elihu Thomson, which, although suggested by some of the Tesla experiments, are still so novel as to be of general interest. These experiments were conducted at a regular session of the American Academy of Sciences, and are so new that the expert scientific men who compose the Academy had never before witnessed them.

The electrical currents used by Prof. Thomson were alternating currents of enormously high potentiality. The primary current was generated by an alternating dynamo, and was of 2000 volts. The current was passed through a converter, the ordinary device for transforming the arc-light current into one suitable for incandescent lamps, and, of course, the voltage, or pressure, was very much lowered. It was next passed through a transforming coil opposite in its character to the converter, and the resulting current was of hundreds of thousands of volts. A portion of the experiments were conducted with this current. For the production of the 30-inch sparks still another coil was used, which increased

the voltage of the current to what is estimated to be from one to two million volts. The last coil was immersed in oil in order to prevent leakage of these enormously active currents.

With a current of more than a million volts many striking experiments were performed. Sparks of upwards of thirty inches in length were produced; great waving ribbons of pale bluish light, which seemed as if swayed by the passing air currents.

The terminal balls of the machine were surrounded with great bunches of needle-like rays, which extended in every direction for a distance of some inches. Lightning, both in appearance and results, was simulated, and with a portion of the current the operator lighted his incandescent bulb through his body. The most beautiful of all the experiments was with a sealed Geissler tube, an experiment practiced for some time on a smaller scale in laboratories. Professor Thomson exhibited some Geissler tubes of large size, which, unlike those commonly used, had no terminals for conveying sparks through the gases contained in them. These were sealed tubes and owe their activity to currents induced within themselves. On approach to the generator of the high currents the tubes lighted themselves at once with those peculiarly beautiful tints which are so characteristic. The explanation of the phenomenon appears to be that the generator, in the production of its enormously high currents, so disturbs the electrical atmosphere in its vicinity that objects which enter this atmosphere are also strongly disturbed. These experiments together form the most interesting and novel electrical exhibition which has ever been seen here, and on its conclusion the grave scientists of the Academy tendered to Prof. Thomas a vote of thanks.

"Photographic Work" (London) is conducted on lines to meet the wants of Amateurs and Professionals, from tyro to the expert, containing Reviews of Books (English and Foreign), Notices of Novelties in Apparatus, Reports upon New Processes, Records of the Proceedings of Photographic Societies, Lists and Abstracts of Photographic Patents, and all news appertaining to Photography. Such pictorial illustrations are given as may be requisite for the better elucidation of the subject matter.

DR. EDER ON THE ACTION OF BROMIDE WITH VARIOUS DEVELOPERS.

DR. EDER has lately been studying the action of bromide of potassium with various developers, and the results of his investigations are decidedly interesting. Bromide, the most commonly employed of the restrainers, he finds varies in the nature of its effects according to the developer with which it is used.

Some developers he points out are particularly sensitive to the influence of bromide of potassium, iron oxalate, for instance, the bromide used as 1 : 10, and a few drops of that strength being added to every 100 c.c. of solution, having an energetic restraining action on normally exposed plates. For over-exposed plates it is only necessary to slightly exceed the proportion of restrainer mentioned.

Pyro-soda behaves in a similar manner to iron, the bromide acting as a simple retarder; if, however, pyro-ammonia be used, the bromide acts as a preventive of fog, to the detriment of its powers as a restrainer of development, and it is necessary, therefore, to increase its proportion. For normally exposed plates, Dr. Eder finds for each 100 c.c. of pyro-ammonia solution, thirty drops of bromide-solution, 1 : 10, desirable, while for over-exposure it should be added in doses of from 5 to 10 c.c. for each 100 c.c. of developing solution.

Hydroquinone-soda (sold in the ready-made form) is less sensitive to the retarding action of bromide than pyro. Development may be restrained therewith by using comparatively large quantities, it is true, but the developer, even with prolonged use, does not yield such good negatives as pyro or iron. Hydroquinone itself, says Dr. Eder, acts as a species of restrainer, for it not only develops slowly, but gives vigorous results, not on account of the bromide that may be used with it, but in consequence of its own decomposition by oxidation retarding the growth of the image without tending to impair the vigor of the resulting negative.

With eikonogen and metol, notably the latter, bromide acts in the double capacity of preventing fog and restraining develop-

ment, but the retarding effect is less noticeable than with the developers previously named. Very fully exposed plates can be held back by the use of bromide, but over-exposed pictures, says Dr. Eder, when developed with metol or amidol, are not so well controlled, even with large quantities of bromide, which is unable to check the energy of metol. An old solution of metol—one that has been used several times—retards development, but does not yield vigorous negatives.

Dr. Eder concludes his interesting notes by saying that to metol-soda or metol-potash a slight addition of bromide (1-1000) has such little restraining power that the manufacturers themselves often add bromide to the ready-made solutions, without the user noticing any retarding effect of these developers. The only effect produced is that negatives so developed have no fog.—*Snap-Shots.*

FLASH-LIGHT PORTRAITS.

THE evolution of the flash-light from a tiny cartridge in a toy pistol to a broad mass of violet flame, six feet square, in the Williams Flash-light, is only the natural growth and outcome of the flash-light idea. The Williams apparatus, used in conjunction with Blitz-pulver, seems to have reached about the largest manageable proportions, and to be more rapid and effective than actual sunshine.

The gelatine dry plates opened up a wide range of undreamed-of possibilities, and instantaneous pictures of men and animals in motion, says E. K. Hough in the *St. Louis Photographer*, and nature in her countless changing moods has been taken captive in the camera by the dry plate, but its operations have been limited mainly to objects in the open air and sunshine. Now the possibilities of the flash-light of Blitz-pulver open another fertile realm of indoor life to the enterprising photographer. Home gatherings, family parties, theatrical representations, wedding parties, children at home, old people, and invalids, can all be taken with their local surroundings, and probably with far

more likelihood of a natural expression than at the conventional gallery.

It is not impossible that in the near future pictures of people will be frequently taken at their homes and business places or social resorts, instead of at the galleries. And if pictures can be made equally natural and pleasing by artificial light, there will come a great change in the style and location of the places where they are made. Instead of galleries being at the top of high buildings—because in the best business parts of the city streets the buildings are usually tall—they may be on the ground floor, perhaps in the rear of a frame and picture or art store, or any kindred business, or come to the front with portraits only in the show windows.

In tropical or semi-tropical countries, where a sitting under the sweltering heat of a photographer's skylight is an almost unbearable penance, or in the more than torrid heat of our hot summers in our large cities, if good pictures can be made at night independent of daylight, people will go for their portraits mainly in the cool of the evening. And then, although the photographer will have his evenings monopolised equally with the marketman and store-keeper, he will find some compensation in not being obliged to work on Sunday, as there will then be no excuse for that desecration of the sacred day, and the Sabbath-breaking photographer can repent and get a chance for heaven as well as other folks.

Modesty.—The Philadelphia Maiden who is so modest that she will not go to bed while the *Christian Observer* is on her table, has been outdone by the bashful Boston belle who declines to walk up a steep hill because it makes her breath come in short pants.—*Comfort*. How about the Toronto girl who won't cross a potato field because the potatoes have eyes and might look at her ankles.—*Inland Printer*. That's all very well, but it ain't a "patch" to the girl that won't sing "My love is the man in the moon," for fear her lover would find it out.—Who's next? Why, the Turkeytown spinster who would not have her picture taken because the photographer would see her standing on her head under his focusing cloth.—Next.

DUPLICATING NEGATIVES IN REVERSE POSITION.

DESIROUS of reproducing a negative in reversed position for an experimental purpose connected with the preparation of a photo-mechanical printing surface, we resolved to do it by means of a dusting-on process originally suggested for this purpose by Messrs. Geymet & Alker, of Paris.

As the reproduced negative has turned out to possess certain qualities not at first sight apparent in the original one from which it was obtained, it may prove useful to many if we describe as closely as possible the means employed, especially as we have reason to think that this system may not be known to some of the large army of modern workers whose knowledge is in some measure confined to what is taught in the manuals of the present period.

The discovery of Poitevin that a coating of a colloidal substance, with bichromate of potash and substances having an affinity for moisture, has imparted to it a discriminative absorption of water according to the action of light upon the bichromate, is probably known to nearly every one who takes the slightest interest in photography as a science; but there are applications of this discovery with which he may not be conversant, and it is to one of these we are now directing attention. As we have hinted, it is to other Frenchmen we owe the suggestion.

We have for several years given in the *Almanac* one or more formulæ for the compounding of deliquescent varnishes that fulfil the conditions mentioned above, and we here give another, differing in no material sense from those referred to, but only in proportions, and we give it, not as being better than the others, but as the one we last made use of with a delightful degree of success.

A plate of glass, selected for its flatness and freedom from defects, is made scrupulously clean, and, having been made slightly warm, is coated with a mixture as follows:—

Glucose	$\frac{3}{4}$ drachm.
Gum arabic	1 "

Glycerine	12 drops.
Bichromate of potash	30 grains.
Water	2 ounces.

This is made warm and then filtered. The coating of the plate with it is facilitated by using a glass rod or a square-edged piece of hard, glazed writing paper. It is then dried before a clear fire, on a shelf in the kitchen oven, or by holding it over a gas stove or atmospheric burner. It is better that the coating be thin rather than thick.

The next thing is to expose it in the printing frame. This must be done while the coated plate is quite dry, and the exposure should be regulated by an actinometer, for one cannot, when using an ordinary printing frame, ascertain the progress of the exposure. But one will soon acquire such a degree of experience as will prevent him going far wrong in future, much in the same way as one does when printing lantern transparencies. Ten minutes in a bright cloudy day will usually suffice for a negative of average density; a bright sun materially shortens the exposure. After exposure, the printing frame is opened in a dimly lighted and damp room.

This is the *rationale* of what has taken place so far. The action of the light has decomposed the potassium bichromate, and converted more or less of it into the oxide of chromium, which, in turn, has rendered insoluble the organic matter in contact with it. This would speedily be shown to be the case if a little water were poured upon the surface, which, of course, must not be done, for, in the course of a few minutes, the parts not hardened by the action of light will absorb moisture from the damp atmosphere of the developing room. But this is on the assumption that there is a considerable amount of moisture in the atmosphere, which is not always the case. How we obviate this will be apparent as we proceed.

To develop the negative, a very soft, fluffy camel's-hair brush is necessary. This is charged with finely powdered plumbago, the very finest possible to be obtained, and it is whisked over the plate by the brush with a circular motion, and avoiding heavy pressure. In proportion as certain parts of the plate—those

which have been shielded from the light—absorb the moisture, and thus become slightly tacky, so does the powdered graphite adhere, and thus slowly build up the image.

If the image is too slow in coming up, as, indeed, was the case in one of our experiments, it indicates one, or perhaps both, of two things. The exposure has been too long, or the atmosphere in the developing room is too dry. In either case this was remedied, not by breathing on the surface, which engenders inequality of damp or moisture, but by suspending in the room a large sheet previously immersed in water, and hung up while dripping wet. This soon established such a hygrometric condition on the coating of the plate as to enable it to attract and retain the graphite. We are of opinion that this method of creating the requisite condition of regulated moisture in the developing room will be found an improvement upon the damp cellar so often recommended in connection with the practice of dusting-on processes, for whatever purposes they are being employed.

After the negative has been satisfactorily developed, it is necessary that it be decolorised by having the bichromate removed. The method adopted by the French experimentalists for effecting this cannot be much improved upon. Coat the negative with a thin collodion, and then place it in water strongly acidulated with hydrochloric acid, by which the yellowness will disappear. After a final rinse the negative is varnished in the usual way.

By the system described, and even with a wide departure from any of the sensitising agents that have been formulated, duplicated reversed negatives may be made with a reasonable degree of certainty.

—*British Journal of Photography.*

Medals.—If we saw a soldier decorated from head to foot with the metallic rewards of his prowess in the field, we should laugh at him. Some of us have a tendency to do the same thing when we hear the modern amateur boasting that he has so many pounds (*avoirdupois*) of medals.

PORTRAITURE.

PROFESSIONAL photographers have long recognized that portraiture is their sheet anchor; landscape and outdoor work may help to bring grist to the mill, but portraiture is what ninety-nine out of a hundred photographers have to depend on. To their credit be it said they do their best, not only to take portraits, but to make pictures at the same time; if their efforts are not appreciated by the crowd *that* is not their fault—they have the satisfaction of having done their best to raise photography from a mechanical operation to a fine art requiring thought and study. To those who have taken up photography as a means of getting rich it is useless to say anything, and to those who have taken up photography as a last resource, because they have failed in everything else, it is also absurd to say anything, but to those who from the bottom of their hearts live in hope that some day or other a photographic portrait will have a value beyond the shilling paid for it, we should like to say a few words about portraiture.

When anyone goes, or at least when most people go, to a photographers' studio they do so with aforethought. Now this given to the sitting beforehand has much to do with the failure of most portraits, the sitter having sometimes worked him or herself up to such a state of nervousness, that when the time comes the photographer feels that instead of trying to take a portrait he ought to give the sitter a dose of soothing syrup and send him home in a cab. As for the children who have been told what to do, and nearly frightened to death with instructions how to behave, it is pitiable to see them trying to be unnatural according to their parents' or nurses' commands, and falling into naturalness instinctively; how every now and then their limbs fall into graceful negligence, then, suddenly remembering, they (the children) stiffen themselves up that they may look as tall as possible. Not only children but grown-up people spoil many a hundred photographs by giving themselves a straighten out just before the cap comes off in the hope that they may appear half an inch taller.

Poor foolish sitters, little do they know that the photographer has it in his power to make the most dwarfish subject appear quite tall whether he "stands up" or no.

Foreigners are never tired of calling attention to the weakest feature of a Britisher's face, the mouth, and the difficulty photographers have in dealing with this member is something terrible; no matter how carefully and skilfully the photographer may work, he never knows but that at the last moment the sitter may spoil all and give him but his labor for his pains by altering, no matter how slightly, the mouth. In fact, the moment the photographer sees his subject this feature should be his constant study. The rest of the features can be dealt with as the photographer wishes, but if the mouth is not natural at the moment of exposure all the rest goes for nothing. Unfortunately, for some unknown reason, it has gone forth that in a photographic portrait the mouth must be shut: if it is never shut during the rest the rest of the sitter's life he must shut it by hook or by crook while sitting for his photograph. His teeth may have cost him as much as the diamond ring on his finger which he is so anxious to show, but not a single tooth must show in the picture. Ladies, too, with the sweetest little mouths, must shut them closely, and make them thin and long, even if in doing so they take out the dimple from their chin, but even in the photographing of mouths there is hope, for people are beginning to see that painters of eminence no longer give their sitters the conventional cupid's bow, but paint the mouth as they find it. No doubt nervousness on the part of the sitter has much to do with the closing of the mouth, for children may be noticed to keep their lips closely shut till they get accustomed to the strange surroundings and the strange man who is to take their photographs. Of course it is not a task for everyone to keep their lips together, but even those whose mouths close without effort often pull a photographic mouth. To get rid of this should be the aim of the photographer, even if everything else, posing and lighting, has to be sacrificed, until the sitter feels at his ease. The tell-tale mouth shows that something is wanted. Many people feel awkward in the studio, simply because they have nothing to do; in many cases the pro-

vision of some simple employment will put the sitter at his ease, some knitting for an old lady, a pipe and a box of matches for an old man, will soon make the sitters interested in something else than themselves.

Then see what attractive specimens photographs of working people make. The preparation of the most ordinary dinner provides no end of pictures, plucking the fowls, peeling the potatoes, shelling the peas, cracking eggs, even the washing up will give material for much better photographs than any quantity of Sunday clothes. Look at Diston's famous pictures, they mostly exhibit some homely phase of daily life; if he has a weakness for old women, that is no reason why others should not make pictures of younger ones.

We have often wondered why our swell portrait photographers do not secure the assistance of some skilled musician to assist them to remove the mask which most people wear in the studio.

If there is one thing more than another likely to thaw the average sitter, it is good music. Why should not the sitter be turned into the studio where the musician is, and when the photographer, in an unseen corner, notices that the music has worked its charm, *then* make his picture.

If only all our sitters were artists, how much easier the work would be; or if only every sitter were conscious of his facial defects, how much less obstinate they would be. How much greater, too, would be the chance of securing a likeness if one could only have the opportunity of studying sitters out of the studio. Every photographer must have been struck with the difference between the appearance of his sitters in the studio and their appearance at home or in the street. Generally they look too old in the studio; this may be owing to the intenseness of the studio light, or the state of nervous excitement they have worked themselves up to. When the light is at fault would it not be better to sacrifice roundness and all other photographic qualities if a happier and less careworn portrait could be made? As it is a likeness rather than a picture that sitters wish for, care must be taken not to risk the loss of the former by attempting to make the latter. For exhibition or show case purposes the

likeness often is immaterial ; but at all other times its importance is paramount. The aim therefore should be to secure, by suitable lighting and treatment of the sitter, a negative which will merely require spotting out at the hands of the retoucher ; even this spotting, now that platinotype printing is so universally employed, may often be dispensed with, for platinotype is a generous friend, not one which looks out, and sets forth little defects, but one which passes over and hides such, and only shows the good qualities of work. It is these good qualities which those sitters who are artists see, and dwell on ; they understand, too, why certain oddities of feature are subdued—in short, they have by training gained the power of seeing themselves, and knowing what they are like.

“ If I could only be taken when I did not know ” is an oft-repeated cry, and shows that portrait photographers have yet much to learn, yet the most successful photograph made without the sitter being conscious of the taking would have far less to say than one made when both sitter and photographer were working together harmoniously. How seldom the sitter tries his best to make the portrait a success photographers only know too well ; in most cases it is, “ Here I am, I have come to be taken, but I defy you to make a good picture of me.”

F. M. S., in *Photography*.

The Artistic Aspect of Photography.—During the course of a lecture before the Woodford Society, J. W. Spurgeon said, “ The point of view, suitable angle, and distance are all very important elements in securing a good picture, even when suitable objects are found. The principal object should never be in the centre, but if a rectangle be divided into three equal parts, both vertically and horizontally, an object on either of these dividing lines will attract attention by reason of its position, the strongest points being at the intersection of the lines. Strong lines in one direction should be balanced by those running in opposition, a wedge should always have its apex supported, and a building have more of the picture in front than behind it. Always aim at breadth of effect, and choose the time of day when the lighting is most suitable.

The Editorial Dropshutter.

A new Photographic Shutter.—The Gundlach Optical Company of Rochester, New York, present a description of a new shutter for photographic lenses which they have just completed, and believe to be the best and most simple shutter in the market. It is unlike any other shutter made, in that all the works are contained within the case, and hence are not liable to get out of order or become defaced with use, besides being protected from the weather, dirt, etc. The blades open parallel, and are so pivoted that the least power is required to operate them. It has a novel safety device which does not admit of the blades opening during the setting of the shutter. It is arranged either for hand or pneumatic release, and for time and instantaneous exposure. This shutter, it is claimed, occupies less space for a given size of lens than any other shutter in the market, and as the shutter mechanism is contained in an accurately turned case it follows that the lenses must remain properly centered when mounted with the shutter.

Panchromatic Plates.—The latest improvement in the manufacture of the sensitive dry plate is the new Panchromatic plate, made by the Lumiere Brothers. These plates are prepared so as to be sensitive to red, yellow and green. Trials made with these new plates seem to substantiate all the claims made for them by the French scientists. A yellow color screen may be used with these plates, which are extremely sensitive. In the development of plates that are simultaneously sensitive to red as well as yellow and green, the problem naturally presents itself, by what manner of light are they to be manipulated or developed. To overcome this difficulty the manufacturers advise that the slide should be loaded and unloaded in the dark, by the mere sense of feeling. Development should take place by a very dull light, the tray being kept covered, and allowed to remain in the bath for a period that can be determined only by actual experiment to be correct.

The editor of the *British Journal of Photography* in commenting on this peculiarity of the new Panchromatic plate says: "There is no real difficulty to be experienced in their development, for after one has remained in the dark room for ten or fifteen minutes the eyes acquire powers of observation sufficient to permit of watching the progress of development with a certain amount of ease, more especially if the light is very subdued, and the dish is kept covered until the details are believed to be rendered visible."

A Photographic Exhibition will be held in connection with the Twenty-third Regiment Fair, in the new Armory, Belford avenue, between Atlantic avenue and Pacific street, Brooklyn N. Y., November 14th to 29th, 1894. The committee of arrangements consists of G. E. Hall, G. W. Wundram, Henry S. Chapin, Allen Ormsbee. The following well known gentlemen have consented to act as judges: A. J. Le Breton, Washington, D.C., T. J. Burton, secretary of The Society of Amateur Photographers of New York City, and Alex. Black of the Brooklyn Institute.

Photographic Hints and Formulæ.

Developing Prints on Albumenized Paper.—A process for developing ordinary albumenized paper has been discovered by Herr Valenta. The exposure is reduced to one-fifth, it is also possible to print by gas or lamp light. After printing and washing in the ordinary way it is developed in the following solution :

1.	
Hydroquinone	10 parts.
Alcohol	100 "
2.	
Sodium sulphite	100 parts.
Citric acid	5 "
Water	500 "

For use, take five parts No. 1, five parts No. 2, and 100 parts water. The image changes from violet to yellowish brown, and all detail in the high lights appears when development is complete. Tone in the following:

Hypo	200 parts.
Amm. sulphocyanide	25 "
Alum	30 "
Acetate of lead (10 per cent. solution)	40 "
Water	500 "

Heat the solution to 60° C., filter and add 50 c.c. of

Gold chloride	1 part.
Water	60 "

Tone for ten minutes, or until the desired color is obtained.

Impurities of Cardboard.—From a series of experiments Dr. H. W. Vogel, writing in *Mittheilungen*, deducts the following conclusions: The formation of fine yellow dots is never to be ascribed to the card-

board itself, but may result from sulphurous bronze powder used in printing, which, in the act of burnishing, gets rubbed off and distributed over the print. Impurities of the cardboard reveal themselves only in broad yellow spots. This is the case often when the fixing has been insufficient, and a surplus of free hyposulphite of soda and silver ($\text{Ag}_2\text{S}_2\text{O}_3 \times \text{Na}_2\text{S}_2\text{O}_3$) remains insoluble in the pictures in spite of washing. The cardboard may be defiled by dust, which often contains particles of sulphurous substances. Prints should, therefore, be carefully wiped, and also the rollers of the burnisher. After mounting, too, dust may have an injurious effect. An equal and general yellowing indicates defective washing. Alum and magnesium chloride are harmless.

Developers.—The developers used by the Society of Amateur Photographers of New York are given below.

The pyro developer in use in the dark room of the Society is made up as follows:

1.—Sulphite of soda, crystals	4 oz.
Water	4 oz.
Sulphurous acid	4 oz.
Pyrogallie acid	1 oz.

Mix in order named.

2.—Sulphide of soda, crystals	1 oz.
Carbonate of soda	1 oz.
Carbonate of potash	1 oz.
Water	11 oz.

For use take 2 drams No. 1, 3 drams No. 2, 3 ounces of water for normal developer.

Hydroquinone developer used by the Society for slides and transparencies:

Sulphite of soda, crystals	400 grains.
Water	20 oz.
Hydroquinone	100 grains.
Carbonate of potash	300 grains.

Mix in order named.

For use take 1 ounce of solution and 1 ounce of water.

Messrs. Schott & Genossen, of Jena, are making chemical utensils of the Jena glass which are warranted to stand great extremes of temperatures, and to resist all kinds of chemical corrosion. Their London agents are Messrs. A. Gallenkamp & Co., of Cross Street, Finsbury. The same agents are introducing Hoare's Test Tube, which differs from the ordinary shape in having a bulb in the centre, by which boiling over is obviated.

Photographic Scissors and Paste.

Photograph Frames.—Photograph frames never go amiss, and the new milk glass makes a tender setting for a well-loved face ; it cannot fail to be admired wherever seen. As yet it is only to be found in artists' supply shops, and must be cut to order, as it is not shown in any but panel shapes. Order your glass, therefore, with a circular opening, and order with it an ordinary back for a covered frame with a slit in which to slip the card. Paint a dainty wreath of blossoms or whatever flower you may prefer, and then bind together the edges of the glass and the back with ribbon of a corresponding color. Pull the ribbon very tight, and you will need to sew it only at each of the four corners. Finish where the edges meet with a handsome bow. The soft, milky surface makes an ideal foundation for the paint, and the effect is one of delicately blended tones.

An Electric Toy.—Mr. Edison has succeeded in constructing a machine which brings a series of photographs before the eye with such great rapidity that the eye cannot detect the change from one photograph to the next. This produces the effect of lifelike action in the series of views. Ten views are now on exhibition. The first shows Sandow the strong performing his feats. Then there is a scene in a barber shop, in which a customer takes his place in a chair and the barber shaves him in regular style. Bertoldi, the contortionist, whose photograph is not more than an inch in length, gives one of her difficult exhibitions. There are a wrestling contest, a rooster fight, a Highland dance, an organ-grinder with monkey, three blacksmiths at a forge, and a gymnast in a flying-ring exercise. It may be said that the rooster fight is the most exciting of views, but it is more edifying to the men and boys than to the women and girls who visit the kinetoscope. Three blacksmiths at the forge are very lively in their movements, it being evident that they are impressed with the importance of striking while the iron is hot. There are thirsty after the iron is shaped, and each in turn takes a drink from a bottle in a manner amusing to the spectator.

Aluminium Matches.—We are told that Herr Meisner, of Vienna, tips wooden splints with a pyrotechnic mixture, containing aluminium powder, thus giving an intense light, affording a portable and ready means of illuminating any object which it is desired to photograph after dark. This will doubtless interest those who wrote

to us some time ago asking for the address of a maker of the actinic matches which we suggested. It is stated, by the way, that such have been found to be adapted for long-distance signalling, which we should not have supposed, however, to be the case in any special degree. The air is most pervious to those rays by which human vision is most actively excited, as is, perhaps, water to those by which the eyes of fishes are chiefly influenced. And of course the most easily transmitted rays must be the best for signaling.

Luminosity of a Candle Flame.—One of the often-advanced objections to the use of a candle as a source of light for comparative purposes is the difficulty in obtaining the light uniform and regular in character; but the greater part of this objection falls to the ground if some recent experiments prove to be correctly reported. In a recent number of Weidemann's *Annalen*, Herr P. Glau describes experiments he has been making on the relative luminosity of flames from various sources, and he has arrived at the remarkable conclusion that the size of the flame is the only factor in the matter—that, indeed, the actual luminosity is directly proportional to the area of the flame.

New Mode of Coloring Scientific Lantern Slides.—At a recent meeting of the Royal Society at Dublin, the president (Sir Howard Grubb) in the chair, Dr. J. Alfred Scott described a method he had devised for coloring lantern slides for scientific or other purposes, apparently referring to photographic slides. The author explained that the gelatine surface should be made wet, and then drained, and when in this damp condition is in a highly suitable state for receiving aniline dyes, laid on in aqueous solutions with a camel's hair pencil, the depth of tint depending on the strength of the solution, and the length of time it remains on the gelatine surface. He found that eosine, tartrazin yellow, vesuvin, and indigo-carmine were the most suitable dyes, especially as they could be mixed, and compound colors formed without chemical decomposition among the "paints." With regard to eosine, however, it should be used stronger than is really required for optical purposes—as it is liable to become reduced in intensity if the slide be often used. When inks suitable for using with a writing pen, are wished for, Dr. Scott recommends the aniline color solutions, with ten per cent. of dextrine, eosine and iodine green being good for the purpose, and for black "encre-noir" made slightly alkaline with ammonia, and similarly thickened.

A National Photographic School.—A Paris newspaper in -be wailing the hard times prevalent among photographers at present in France, gives the opinion that the only effectual way of permanently improving the photographic profession is to establish a National Photographic School, similar to those in existence in Germany and Vienna. This, in our mind, is also the one drastic and vital measure to be taken before our American photographers as a class can be materially elevated from the present unsatisfactory level of bad trade. A photographer to secure even moderate success must be something of an artist. How can this be attained unless he has had the opportunity of an education in art? He must also have some ability in chemical manipulation. His commercial knowledge must not be neglected. Where at present can such a curriculum be obtained? Nowhere, unless indeed he goes to Vienna or Berlin, and studies under Eder or Vogel.

Sealing-wax Etiquette.—In France sealing wax has by no means gone out of use as a consequence of the introduction of gummed envelopes. There is even a sort of code or language of sealing wax among fashionable people. White sealing wax is chosen for communications relating to weddings, black for obituaries, violet for expressions of sympathy, chocolate for invitations to dinner, red for business, ruby for engaged lovers' letters, green for letters from lovers who live in hopes, and brown for refusals of offers of marriage, while blue denotes constancy, yellow, jealousy, pale green reproaches, and pink is used by young girls, and gray between friends.

Excess Postage.—An English exchange sends out the following notice. "The paying of excess postage on letters from America and the Colonies is becoming an unbearable tax upon us. We frequently pay several shillings per mail, mostly on letters from the United States. Will our friends remember that inland postage does not cover postage to England, and that the 5 cents charge covers only a half-ounce weight. The same applies to the 2½d. charge from the English colonies. It is becoming quite a common thing for us to pay 1s. 3d. (or 30 cents) on a single letter." It will be well for our transatlantic friend to remember that the above holds good on matter from England as well.

There is no pleasure of life sprouting like a tree from one root, but there is some pain joined to it, and again, nature brings good out of evil.—*Menander*.

A Great Telescope.—Andrew Carnegie and Henry Phipps, Jr., it is stated on reliable authority, have agreed to furnish the greater part of \$150,000 with which it is proposed to equip a new park observatory with a giant telescope to exceed the Lick instrument. Professor John A. Brashear, together with Mayor Kennedy, of Allegheny, and James Hunter, have made observations on the land suggested as a suitable site. They found the location admirable. The mount contains about sixteen acres, and commands a view unobstructed by hills or smoke. Mayor Kennedy is in sympathy with the movement. The land belongs to the city of Allegheny, and all that will be necessary is an ordinance from councils. Mr. Carnegie, it is understood, stands ready to pay a subscription as soon as details of cost and construction and maintenance can be estimated. To establish the observatory would require an outlay of perhaps \$200,000, as it is proposed to make a lens 50 inches in diameter. Mr. Brashear is confident he can make a lens of that size, but to grind the monster pieces of crown and flint glass which fit together to make an achromatic refracting lens would take at least a year. Previous to that time a considerable period would be needed to get the glass, as it must be imported from France. The tube for the telescope must be at least sixty-three feet long requiring a dome more than fifty feet in diameter. The largest telescope now in use, at the Lick Observatory, Mount Hamilton, contains an object glass thirty-six inches in diameter, but two others are now being made which outstrip it. One is a $37\frac{1}{2}$ inch glass for Lowe Observatory, on Mount Lowe in Southern California. The other is being ground for the Yerkes Observatory of the Chicago University, and will measure 42 inches.

A Misleading Paragraph.—Now going the round of the daily press, lets forth that amateur photography has taught many thousands the truth as to the cost of photographic processes, and made it more difficult than it once was for professional photographers to charge exorbitant rates for so called "extras." It sometimes happens that one dollar per dozen extra is added to the price of photographs for processes that consume little or no time, and require the use of materials that are almost valueless. Now the truth is perhaps no class of persons have less idea of the costs connected with professional photography than the smart amateur who knows it all or thinks he does.

Scratch yourself with your own nails; always do your own business, and when you intend asking for a service go to a person who can appreciate your merit.—*Arabic.*

In the Twilight Hour.

A GLOOMY heart is one that keeps God out.

SMALL troubles sometimes throw large shadows.

MANY people who do not believe in a hell live in one.

GOOD looks to be permanent must begin on the inside.

YOU can't please a man who is dissatisfied with God.

WE should never give advice we are not willing to take.

THE thought that he can be well off with little, never enters the worldling's heart.

HE who depends on God for his daily bread has no need to cheat his neighbor to get it.

YOU have not fulfilled every duty, unless you have fulfilled that of being pleasant.—*Charles Buxton.*

OTHERS will judge you, not by what you can be, but by what you are; God judges not by what you are, but by what you can be.

THEY who yield to us when we are wrong can give us no support when we are right. The possession of money has kept more people away from Christ than the want of it.

COULD we but learn to work for this day's bread, and leave the next to itself, huddling not our days together, deferring to the future its own tasks or troubles, we should find such capacity for work, and enjoyment of life, as we are, for the most part, strangers to.

TEMPTATIONS teach us our need of Christ.

EVERY right act gives God a firmer hold upon us.

THE worst devil one can be possessed with is self.

IF you would lift up you must be on higher ground.

GOD uses the man who is trying to improve his talents.

THE hypocrite is only on his good behavior when he thinks that he is watched.

WITH one hand God may seem to crush us; but with the other hand he will sustain us.

PUTTING screens in the saloon doors is the devil's way of saying that he is ashamed of himself.

THE most valuable, pure, useful and durable of all metals is tried gold; so is tried faith among all the Christian virtues.

THE man who is not against the liquor traffic with all his weight is in favor of giving the devil a license to do business on earth.

CONTENTMENT is a pearl of great price, and whoever procures it, at the expense of ten thousand desires, makes a wise and happy purchase.—*J. Balguy.*

ONE great characteristic of holiness is never to be exacting, never to complain. Each complaint drags us down a degree in our upward course. If you would discern in whom God's spirit dwells, watch that person, and notice whether you ever hear him murmur.—*Gold Dust.*

Literary and Business Notes.

NEW ENGLAND LANTERN SLIDE
EXCHANGE,
PROVIDENCE, R. I., July 26th, 1894.
KEYSTONE DRY PLATE AND
FILM WORKS,

Wayne Junction, Philadelphia, Pa.

MR. JOHN CARBUTT: Dear Sir:—Having recorded the different makes of Lantern Slide Plates that appeared in the New England Exchange during the past year, I thought it might interest you to know that out of 598 named plates 509 are of your make, showing the popularity of your Lantern Slide Plates throughout New England.

Very sincerely yours,

R. CLINTON FULLER, *Secretary*.

(Copy.)

THE FIRST TELEGRAM.

MISS ANNIE G. ELLSWORTH, daughter Commissioner of Patents at the period, was the first of a vast multitude whose thoughts have been tapped for readers from a wire, miles away from the spot where, but a moment before, they were originally uttered. She had brought the anxious inventor the earliest information of the successful passage of the bill which was so important to him and the world. Had any early watch-dog of the Treasury been on duty on that eventful night, our present well-developed telegraph system would have suffered a long set-back.

It was no sentimental nor mercenary phrase that the young lady presented as the initial message of this wire-chasing Mercury, this new swift word-carrier for

mortal man, but one of wide and serious scope. Its words, "What hath God wrought," have become almost as familiar to American readers as a passage of Holy Writ. In the possession of the Connecticut Historical Society at Hartford is a long narrow strip of white paper embossed with a line of the Morse alphabet, and bearing Professor Morse's signature to an inscription stating this to be the first line, and giving the name of Miss Ellsworth as the sender.—GEORGE J. VARNEY, in *October Lippincott's*.

AMERICAN LEAGUE OF AMATEUR
PHOTOGRAPHERS.

CRAWFORD, N. J., Aug. 16th, 1894

KEYSTONE DRY PLATE AND
FILM WORKS,

Wayne Junction, Philadelphia, Pa.

DEAR MR. CARBUTT:—I have tested your J. C. Tabloids on about fifty exposures, quick work with the duplex shutter, and find them all that you claim. The quality of the negatives has been more than satisfactory, and the prints such as render it difficult for my friends to the rapidity of the exposure. The density and detail of the negatives has been in every instance almost equal to time exposures, and as I purposely strained the conditions in order to test thoroughly, such as exposures under thick foliage in shadows, I am fully warranted in endorsing the developer thoroughly. Permit me to congratulate you on its success.

Yours sincerely,

R. M. FULLER, *General Secretary*.

(Copy)

